

## TECHNICAL DATA SHEET

**Product Name:** Palmitoyl Tripeptide-1

**INCI Name:** Water, Glycerin, Palmitoyl Tripeptide-1, Phenoxyethanol

**CAS:** 7732-18-5, 56-81-5, 147732-56-7, 122-99-6

**Sequence:** Pal-Gly-His-Lys-OH

**Chemical Classification:** Nanoemulsion

**Functional Category:** Skin and Hair Conditioner

**Raw Material Origin:** USA/China

**IUPAC Name:** 6-amino-2-[[2-[[2-(hexadecanoylamino)acetyl]amino]-3-(1H-imidazol-5-yl)propanoyl]amino]hexanoic acid

**Chemical-Physical Properties:** Palmitoyl Tripeptide-1 is a synthetic peptide consisting of three amino acids: glycine (Gly), histidine (His), and lysine (Lys). Peptides are formed by peptide bonds between the carboxyl group (-COOH) of one amino acid and the amino group (-NH<sub>2</sub>) of the next. Glycine (Gly) is the simplest amino acid with the structure NH<sub>2</sub>-CH<sub>2</sub>-COOH, histidine (His) is an amino acid with an imidazole side chain, and lysine (Lys) is an amino acid with an ε-amino group in the side chain. In the tripeptide core, glycine represents a small and flexible amino acid, while histidine containing an imidazole ring can participate in forming hydrogen bonds and coordinating metal ions, and lysine with a positively charged side chain at physiological pH increases interaction with negatively charged cell membranes or extracellular matrix components. This structure allows Palmitoyl Tripeptide-1 to mimic natural peptides in the skin, promoting collagen synthesis and skin repair processes. At the N-terminal end of glycine, palmitic acid is attached, forming Palmitoyl-Glycine, whose key function is to increase solubility and penetration of the peptide into deeper layers of the skin. Palmitoyl Tripeptide-1 is soluble in DMF (30 mg/mL), DMSO (10 mg/mL), and ethanol (30 mg/mL). It is a clear, transparent liquid, odorless. Peptide content is 1000 ppm. pH 4.5-6.5.

**Effect on Skin:** Palmitoyl Tripeptide-1 supports the regeneration of visible skin damage and strengthens the fundamental building blocks of the skin. It is categorized as a "mes-

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senger peptide" due to its ability to "tell" the skin how to look better, especially in terms of reducing signs of damage caused by ultraviolet (UV) sun exposure. As a signaling molecule, Palmitoyl Tripeptide-1 stimulates fibroblasts to increase collagen synthesis. It can activate certain signaling pathways within fibroblasts, increasing the expression of genes responsible for collagen synthesis and other key extracellular matrix proteins. This leads to increased collagen production, improved skin firmness and elasticity, and reduced wrinkles and other signs of aging. It enhances skin hydration, making it smooth and soft. Studies have shown that this peptide has similar anti-aging benefits as retinol. It is recommended to use both ingredients simultaneously to achieve a synergistic effect on the skin, resulting in better and faster results in reducing wrinkles and improving skin texture. In 2018, the Expert Panel for Cosmetic Ingredient Review in the USA reviewed personal care products containing palmitoyl tripeptide-1 in concentrations ranging from 0.0000001% to 0.001% and concluded that it is completely safe in the current practice of use at given concentrations.

**Usage Instructions:** Palmitoyl Tripeptide-1 is typically used to make serums, creams, lotions, and other skin care products. The product can be formulated in concentrations ranging from 3% to 8%. Using Palmitoyl Tripeptide-1 can significantly improve the appearance and health of the skin, providing visible anti-aging benefits.

**Animal Testing:** The substance has not been tested on animals.

**GMO:** Not GMO

**Vegan:** Does not contain animal-derived components

**Storage:** Store in a refrigerator at a temperature between 4 and 8°C.

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